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April 29, 2019

Ms. Wynn Prusaczyk
Virginia Department of Environmental Quality
Northern Regional Office
13901 Crown Court
Woodbridge, Virginia 22193

By Email (wynn.prusaczyk@deq.virginia.gov)

Re: Joint Permit Application No. 19-0170, Potomac Yard Metrorail Station
City of Alexandria's Response to Second Additional Information Request
Letter (April 1, 2019)

Dear Ms. Prusaczyk:

Potomac Yard contains one of the most substantial remaining areas of developable land in the City of Alexandria along a Metrorail line. Due to its proximity to Washington, D.C., Alexandria is growing rapidly, and this area inevitably will be developed one way or another. To meet the City's long-term urban planning and economic development goals, however, it is imperative that this growth be directed into sustainable transit-oriented development that produces a high-density, high-value, walkable, sustainable, mixed-use urban community. Twentieth-century development paradigms that rely heavily on automobiles to move residents, workers, and visitors into, out of, and through the area are incompatible with the City's long-term goals and the plans for Potomac Yard. Instead, maximizing sustainable transit-oriented development in Potomac Yard is made possible by convenient walkable access to the Metrorail system. The City's land use planning and transportation planning are integrated into the overall strategies and goals for the City's growth.

At bottom, this is why a Potomac Yard Metrorail Station that is within walking distance of as much of the developable land and the amount of development in Potomac Yard as reasonably possible—that is, a station at Alternative B—is the foundation of the City's long-term plans for the area. This is also why the Commonwealth Transportation Board, with the support of the Virginia Department of Rail and Public Transportation, selected the Potomac Yard Metrorail Station Project for \$50 million in Virginia Transportation Infrastructure Bank loan support, and

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why the Governor and the General Assembly recently approved \$50 million for Potomac Yard Metrorail station enhancements as part of the Commonwealth of Virginia's Amazon HQ2 related incentive package. This project is not only significant locally and regionally; it is highly important to the Commonwealth.

Given the vital importance of the Potomac Yard Metrorail Station to the City and region's long-term growth, the City appreciates the Virginia Department of Environmental Quality's very thorough and conscientious review of the City's Joint Permit Application. The Virginia Water Protection permit program, and its federal counterpart in the Clean Water Act § 404 permit program, is intended to function as an iterative process to evaluate all practicable opportunities to avoid and minimize environmental impacts. We therefore welcome this opportunity to provide supplemental information in response to the Department's April 1, 2019 letter. The enclosed response not only provides new information developed in response to the Department's specific questions but also endeavors to add clarity to some of the previously submitted information in the Joint Permit Application and the City's March 11, 2019 Additional Information Response relevant to the alternatives analysis.

Please let Emily Baker know if you have any questions or additional information is needed.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Mark B. Jinks', followed by a horizontal line.

Mark B. Jinks
City Manager

Enclosure (as stated)

cc: Emily A. Baker, Deputy City Manager
Thomas A. Faha, VDEQ
Trisha Beasley, VDEQ
Terry Crockett-Augustine, USACE

Potomac Yard Metrorail Station,
Joint Permit Application No. 19-0170
City of Alexandria's Response to
Virginia Department of Environmental Quality's
Second Additional Information Request Letter (April 1, 2019)

April 29, 2019

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I. Summary of Basis for Selection of Alternative B as the Least Environmentally Damaging Practicable Alternative for the Potomac Yard Metrorail Station

Constructing a Metrorail station at the Alternative B location is the *only* practicable alternative available that fully meets the long-term urban land use planning and economic needs of the City and maximizes access to the Metrorail station as embodied in the application's Project Purpose statement. The final proposal also avoids and minimizes aquatic and other environmental impacts (such as noise and air pollution) to the maximum extent practicable. This conclusion has been reached through a nearly six-year environmental review and permitting process involving the City, Washington Metropolitan Area Transit Authority (WMATA), various other federal and state agencies, and engaged members of the community. Through this process, dozens of potential alternatives were evaluated, with an increasing level of scrutiny applied to alternatives as they were carried forward through each stage. The following summarizes that process and explains how Alternative B came to be identified as the least environmentally damaging practicable alternative (LEDPA).

A. Project Purpose and Need: Maximize Sustainable Transit-Oriented Development of Potomac Yard

Alexandria, because of its proximity to the urban core of the Washington, D.C. metropolitan region, is the most densely populated city in the Commonwealth. Over the next 30 years, its population is projected grow another 40% and the number of workers in the City is projected to grow by 46%.¹ Accommodating future growth of new residences and office space in a sustainable way requires the City to maximize the beneficial use of its remaining developable land. The mix of uses and urban densities will enable Potomac Yard to develop in a more sustainable (environmentally and economically) and enable a significant portion of the City's future growth to occur in an area that has access to a Metrorail station, enabling a reduction in car use and carbon emissions.

The Potomac Yard area is one of the key areas identified by the Metropolitan Washington Council of Governments for desirable future transit-oriented sustainable development.² Because Potomac Yard is one of the most substantial area of developable land in the City along a Metrorail line, the City's long-term land use and transportation planning efforts have identified this site as a keystone of the City's future development and growth since the Potomac Yard/Potomac Greens Small Area Plan was adopted in 1992.³

Although the Potomac Yard Metrorail Station has been planned for decades, recent events will increase the pace of growth in Alexandria, and Potomac Yard in particular, and increase the need for urban land use planning that incorporates best practices to maximize walkable Metrorail access

¹ Refer to page 14 of the Joint Permit Application (JPA).

² According to the U.S. Environmental Protection Agency, "transit-oriented development" is "compact development built around a transit station or within easy walking distance (typically a half-mile) of a station and containing a mix of land uses such as housing, offices, shops, restaurants, and entertainment." EPA, *Smart Growth and Transportation*, <https://www.epa.gov/smartgrowth/smart-growth-and-transportation>.

³ Refer to page 15 of the JPA.

to this area. In November 2018, the Commonwealth of Virginia and Arlington County announced agreements with Amazon that contemplate that some 25,000 new jobs will be added to the north end of the Route 1 corridor, including North Potomac Yard. The future availability of a Potomac Yard Metrorail Station within walking distance of North Potomac Yard was an element of the successful pitch.⁴ This underscores the importance of the purpose and the need for this project.

The basic ingredients necessary to maximize high-density development are (1) land available for development or redevelopment, (2) the ability to build tall buildings, (3) a mix of residential and commercial uses, and (4) convenient and safe walkable access to mass transit so that less real estate need be devoted to automobiles (e.g., wider roads, parking lots and garages). The southern portion of Potomac Yard, including the Potomac Greens neighborhood, has generally been fully developed, excluding the commercial areas in Landbay G and H.⁵ Due in large part to the lack of access to Metrorail and its location in the flight path of Runway 4/22 of the Reagan National Airport, much of that development has been in form of medium-density residential uses—i.e., townhomes and multi-family buildings. The remaining developable land (i.e., vacant or slated for redevelopment) is concentrated in North Potomac Yard (also referred to as Landbay F or Coordinated Development District (CDD) #19), with some additional developable parcels in the center of Potomac Yard (Landbays G and H). The majority of North Potomac Yard can support the highest-density development because it is not subject to building height restrictions imposed by the Federal Aviation Administration due to proximity to a Reagan National Airport runway.⁶ Thus, there is a sizeable area of land in North Potomac Yard available for development that can accommodate tall buildings. The only missing ingredient necessary to incentivize and to maximize high-density sustainable transit-oriented development in this area is walkable access to the existing regional Metrorail line that runs along its eastern boundary.⁷

The City prepared the North Potomac Yard Small Area Plan (NPYSAP) in 2010, and revised it in 2017, to guide the sustainable transit-oriented development of North Potomac Yard.⁸ The NPYSAP was developed as a collaborative effort by the City Planning Commission, various relevant City departments (e.g., Office of Housing, Department of Planning and Zoning, Department of Transportation and Environmental Services), and an Advisory Group composed of citizens and other subject-matter experts.⁹ The NPYSAP affirmed that the Potomac Yard Metrorail Station is indispensable to the sustainable, high-density transit-oriented development of Potomac Yard needed by the City to accommodate future growth:

⁴ NOVA, *National Landing Transportation Solutions* ([Attachment A](#)).

⁵ Refer to Fig. 6 of the City's March 11, 2019 Response.

⁶ Refer to Fig. 7 of the City's March 11, 2019 Response.

⁷ Potomac Yard sits along the longest segment of the Metrorail system within the beltway not served by a station. JPA 15. The distance between the National Airport station to the north and the Braddock Road station to the south is over 3 miles.

⁸ "One of the most important features of North Potomac Yard is its commitment to *transit-oriented development*." NPYSAP 83 (emphasis added).

⁹ Refer to page ii of the NPYSAP.

The transportation and circulation through the site are based on the provision of a Metrorail station and dedicated transit. ***Without a Metrorail station, the Plan does not work and is not feasible.*** . . . Without all the necessary infrastructure improvements and amenities working together and phased appropriately, potential tenants, residents, and retail patrons will go somewhere that does provide the desired level of infrastructure improvements and amenities.

NPYSAP 112 (emphasis added). More specifically, the plan states that the transportation network in North Potomac Yard cannot handle the volume of high-density development planned for the area without access to the Metrorail system:

The rezoning of North Potomac Yard (Landbay F) increases the development in North Potomac Yard from 600,000 sq. ft. of “big box” retail to 7,500,000 sq. ft. of mixed-use development. ***The transportation network in this area of the City will not support this level of development, and therefore, the construction of a new Metrorail station and dedicated transitway are necessary to accommodate the planned development.***

NPYSAP 116 (emphasis added).

Urban land use planning, zoning, and land use are core functions of City government. The General Assembly charged the City with “improv[ing] the public health, safety, convenience, and welfare of [its] citizens and to ***plan for the future development of communities to the end that transportation systems be carefully planned.***” Va. Code § 15.2-2200 (emphasis added). The NPYSAP reflects the considered execution of this core function,¹⁰ and this project has been proposed to implement an indispensable element of that plan.

Accordingly, the Project Purpose statement in the JPA is intended to succinctly capture the long-term urban land use planning and economic development goals for Potomac Yard that are explained in much greater detail in the NPYSAP and various other related planning documents. The overall Project Purpose statement is as follows:

To maximize access to local and regional transit to and from the Potomac Yard area along the U.S. Route 1 corridor for the greatest number of current and future residents, employees, and businesses in support of currently proposed and anticipated development in the area over the next several decades consistent with the adopted North Potomac Yard Small Area Plan, without excessive disruption of

¹⁰ The Corps’ regulations also are instructive on the importance of local land use decisions to the review of permit applications. Those regulations provide: “The primary responsibility for determining zoning and land use matters rests with state, local and tribal governments. The district engineer will normally accept decisions by such governments on those matters unless there are significant issues of overriding national importance.” 33 C.F.R. § 320.4(j)(2); *see also* 33 C.F.R. § 336.1(c)(ii) (“Where officially adopted state, regional, or local land use classifications, determinations, or policies are applicable, they normally will be presumed to reflect local views and will be considered in addition to other national factors.”).

the current rail services while providing for the safety of workers and the general public.

JPA 14. This statement, of course, guides the alternatives analysis and LEDPA determination mandated by the VWP and Clean Water Act § 404 regulations. To the extent it was not clear from the JPA, it would appear beneficial to unpack this statement and briefly explain how it encapsulates the broader land use planning and economic development goals summarized above.

The Project Purpose statement begins with the objective to provide “access to local and regional transit to and from the Potomac Yard area . . . corridor for the greatest number of current and future residents, employees, and businesses . . . over the next several decades consistent with the adopted North Potomac Small Area Plan.” This provision reflects the fundamental purpose of this project: to provide walkable access to the regional transit system (i.e., Metrorail) in order to enable the high-density development in Potomac Yard called for in the NPYSAP.

By specifying that “*access*” to the system should be “*maximize[d]* . . . for the *greatest number*” of potential riders, the statement parallels the NPYSAP’s goal of maximizing high-density development. Maximizing the number of riders that have *access* to the station means that it must be constructed at a location that will support the greatest amount of high-density development within walking distance.¹¹

Lastly, the Purpose Statement provides that the project should not cause excessive disruption to current Metrorail services or create an unreasonable safety risk.¹² The City intends to use increased access to the Metrorail station to catalyze development in Potomac Yard. That objective assumes in large part that Metrorail access is a very attractive transportation amenity. As discussed further below, major disruptions to Metrorail service have long-term impacts on the public’s perception and use of the system. Likewise, common sense suggests that public perception of Metrorail’s safety can have similar effects. Thus, it would be wholly contrary to the goals of the project if construction of the new station diminishes the public’s perception of the benefits of that station.

B. Lengthy Screening Process Leading to the Four Build Alternatives

Although the alternatives analysis in the JPA focuses on four potential locations for a new Metrorail station (Alternatives A, B, B-CSX, and D), it is important to recognize that those four options represent the continuation of a much broader screening process that formally commenced

¹¹ The City recognizes that the inclusion of Metrorail ridership projections in the JPA may have been a source of confusion. To be clear, the Project Purpose is to maximize “access” to the new station. The number of persons with “access” to the station reflects the number of residents, workers, and expected visitors within walking distance of the station. In other words, it is a proxy for the amount of high-density, high-value, walkable development that will be supported by the station. Projected increases in Metrorail ridership is an important benefit of the project and it may be an indirect indicator that the station is accessible to a greater number of people—but increasing Metrorail ridership is not *per se* part of the project purpose.

¹² Disruption of the current Metrorail service and safety also are relevant considerations in the practicability alternatives analysis.

in 2010. The broad objective of this nine-year review has been to determine how best to provide a transportation network that supports the planned high-density development in Potomac Yard.

The City and WMATA initially evaluated eight potential locations for the Potomac Yard Metrorail station. DEIS 2-2. All eight potential station locations, as well as a No Build Alternative, were considered in the scoping phase of the Environmental Impact Statement prepared by the Federal Transit Administration and the City, with the cooperation of the National Park Service and WMATA. The specific station locations “were chosen to maximize access to the planned development in Potomac Yard, minimize impacts to the Greens Scenic Area easement to the north of Potomac Greens, and minimize impacts to wetlands.” *Id.* 2-9. Each location was evaluated for construction of an underground, at-grade, or aerial station. *Id.* 2-3. Additional alternatives were added during and following the screening process, including other station locations and alternatives that did not involve a new Metrorail station, such as increased use of buses, new Virginia Railway Express station, new parking garage, and new ferry service. *Id.* 2-5, 2-9. Altogether, 39 different alternatives were considered.

Alternatives were screened out if they were inconsistent with the purpose and need of the project, incompatible with the City’s land use and development plans, or infeasible technically. *Id.* 2-7. Through this public, multi-party screening process, the 39 alternatives were narrowed to four station locations and the No Build Alternative. Each of the remaining alternatives was subjected to a comprehensive environmental review and alternatives analysis, which are reflected in the Draft and Final Environmental Impact Statements (DEIS and FEIS). Ultimately, Alternative B was identified as the “Preferred Alternative.” *Id.* 2-14. The Federal Transit Administration and National Park Service subsequently issued their respective approvals for construction of a station at Alternative B.

The JPA and subsequent responses to information requests present a more refined analysis of the station location Build Alternatives and the No Build Alternative which were reviewed in the DEIS and FEIS.¹³ Though the Environmental Impact Statement process was thorough, it was concluded in 2016 at a relatively more preliminary stage of project development. Most significantly, the FEIS recognized that station design, construction schedule, and cost details would be finalized at a later date in conjunction with the selection of a design-build contractor. *Id.* 2-15. The final station design, construction schedule, and cost details have a great bearing on whether the project is “practicable,” and therefore are highly relevant to the VWP and Clean Water Act § 404 alternatives analysis. The City has developed additional information since 2016 (including data developed in response to the Department’s April 1 letter), to further refine the alternatives analysis included in this application. This new information reinforces the FEIS’s conclusion that Alternative B is the Preferred Alternative and demonstrates that it also is the LEDPA.

¹³ The DEIS and FEIS were incorporated into the JPA by reference.

C. Refined Evaluation of the Four Build Alternatives Confirms Alternative B Is the Only Practicable Alternative

Each of the four build alternatives has been evaluated to determine if it presents a practicable option available to the City. An alternative is “practicable” if it is “available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.” 9 VAC 25-210-10; *see also* 40 C.F.R. § 230.10(a)(2). In this section, the City summarizes the relevant information for Alternatives A, B, B-CSX, and D that has a bearing on whether they are practicable in terms of cost, technology, and logistics. The following section discusses which alternatives meet the Project Purpose.

1. Cost

As requested by the Department in its April 1, 2019 letter, the City has further refined the projected cost and revenue figures for the various alternatives. Previously, the City had concluded that Alternatives B-CSX and D are impracticable as a function of cost. Based on a more detailed analysis than had been conducted previously, the City has concluded that the cost of Alternative A also is impracticable. Thus, Alternative B is the only practicable alternative based on cost.

“If an alleged alternative is unreasonably expensive to the applicant, the alternative is not ‘practicable.’” 45 Fed. Reg. 85336, 85343 (Dec. 24, 1980); *see also* DEQ, Guidance Memo. 04-2007 at 3. The City asserted in the JPA that any alternative that is more than 20% greater in cost than the proposed alternative is impracticable. JPA 48. The selection of a 20% cost increase as the threshold for impracticability is consistent with recent examples that have been subjected to judicial review. *E.g., Friends of the Santa Clara River v. United States Army Corps of Eng’rs*, 887 F.3d 906, 921 (9th Cir. 2018) (finding 13% increase in cost sufficient to demonstrate impracticability of alternative for proposed development). Moreover, the City explained in its March 11, 2019 Response (p. 9–10) that *any* material increase in cost arguably is unreasonably expensive given that the estimated cost to construct a station at Potomac Yard under any of the alternatives is “substantially greater than the costs normally associated with the particular type of project,” USACE, Reg. Guid. Ltr. 93-02 (Aug. 23, 1993), based on other comparable Metrorail stations. A 20% cost increase is therefore a reasonably conservative measure of impracticability in this context.

The City prepared a more refined estimate of the construction budget costs for Alternatives A, B, and B-CSX using updated information.¹⁴ The cost to construct a station at Alternative B—which is based primarily on the actual budget figures from the executed design-build contract—is \$320 million. The cost to construct a station at Alternative A is \$398 million, or approximately 25%

¹⁴ An explanation of the methodology used to prepare these updated estimates is provided in Response 1a below. Further analysis was not conducted for Alternative D because its preliminary cost estimates are considerably greater than all other alternatives. As described in the City’s March 11, 2019 Response, a more refined cost estimate would be expected to further increase the cost estimate for this alternative. Alternative D is patently impracticable and was not mentioned in the Department’s information request. That alternative is fully addressed in the JPA and March 11, 2019 Response and will not be discussed further in this response.

more expensive than Alternative B. The cost to construct a station at Alternative B-CSX is \$563 million, or approximately 76% more expensive than Alternative B. This analysis demonstrates that Alternatives A and B-CSX are unreasonably expensive, and therefore these alternatives may be excluded as impracticable.

2. Logistics

The logistics prong of the practicability definition has traditionally been construed broadly to consider factors that bear on the successful completion of a project such as a project schedule and timing issues, constructability constraints, and safety hazards. Constructing a new infill Metrorail station in a densely populated urban environment inevitably creates a host of logistical challenges. The only alternative that does not present impracticable logistical challenges is Alternative B.

Constructing a station at Alternative B does not present any unusual logistical challenges beyond those inherent in constructing any off-line Metrorail station. Because the major elements of the station will be constructed “off-line” adjacent to (but not within or over) the existing Metrorail tracks,¹⁵ the City’s contractor will have complete control of the site and can proceed with construction in a typical fashion. Thus, there are no unusual constructability or safety concerns. Land acquisition does not present an obstacle because the City either owns the land (3.30 acres of 3.97 acre site); has approval to acquire the land (0.16 acre in fee and easements totaling 1.71 acres); or has the power to condemn the land (0.51 privately owned acres with no homes). Lastly, construction is financially feasible. In fact, the debt service cost for Alternative B is substantially lower than the other alternatives, and it is projected to produce the greatest amount of tax revenue for the City. Construction of a station at Alternative B is therefore logistically practicable.

Constructing a station at Alternative A presents substantial logistical challenges that are not common to Alternative B. The logistical challenges flow from two compounding circumstances: (1) the station must be constructed “on-line,” meaning that it must be built over the existing, operating Metrorail tracks, and (2) the station must be built within a much smaller footprint due to the limited space between the potential station location and homes in the Potomac Greens neighborhood. As discussed in previous submissions, the only potentially feasible way to construct a station at Alternative A is to build a steel protective shell (also referred to as a “protective structure”) over the tracks, construct the station over top of the protective shell, and then remove the protective shell as one of the final stages of construction. The foreseeable downsides to using this regionally unprecedented method to construct a Metrorail station are many:

- Constructing and removing the shell creates substantial additional costs (at least \$20 million) and adds time (at least 16 months) to the project schedule.¹⁶

¹⁵ Alternatives A, B, and B-CSX each require that a pedestrian bridge be constructed over the existing Metrorail and/or CSXT tracks.

¹⁶ For an explanation of these figures, refer to the *Alternatives Cost Review* (Mar. 10, 2019), which was attached to the March 21, 2019 Response.

- Even with the shell in place, this alternative requires existing Metrorail service to be disrupted more frequently. Shutdowns would be required to erect and remove the shell. Furthermore, elements of station construction involving the lifting of heavy station elements over the tracks would require either additional shutdowns of the Metrorail line during revenue periods and/or would be accomplished during inconvenient night and weekend periods.
- The protective shell mitigates, but by no means eliminates, risks to the public and construction workers inherent in having hundreds of high-speed trains travel through the construction site each day (see details in Response 2d below).
- Workers, materials, and equipment would not be able to cross the operating Metrorail tracks. The nearest safe location to cross from one side of the station construction site to the other will be a crossing point a quarter-mile south of the station location. This will create additional logistical challenges and construction time delays.

Compounding these issues, the Alternative A site is nestled between the existing CSX right-of-way and the Potomac Greens residential neighborhood. This location creates additional logistical challenges, including:

- The available laydown area, particularly on the east side of the station between the existing track and homes in Potomac Greens, is extremely limited. Forcing construction to proceed in a such confined space increases the risk to workers and presents daily challenges to the efficient movement of equipment around the site.
- At this stage, the project team cannot rule out the potential that the most feasible solution to the problems presented by the extremely limited construction area would be to condemn a row of private homes in the Potomac Greens neighborhood immediately adjacent to the site. Condemnation proceedings would likely add substantial additional time to the schedule and expense to the project. These proceedings would have to be resolved before construction could begin. Moreover, it likely would force families from their homes, and at best would cause residents to lose use of their yards and driveways during construction. The City strongly wishes to avoid this adverse impact on any of its residents.
- Constructing a track double crossover in such close proximity to homes is expected to cause increases in the noise and vibration. Noise levels that already exceed the WMATA noise criteria at seven residences would be increased. Additionally, new vibration impacts would exceed the Federal Transit Administration (FTA) criteria at six residences and the WMATA criteria at one residence. These exceedances would trigger a mitigation review with FTA and WMATA. The Environmental Impact Statement considered potential mitigation options, but it deferred further evaluation and decisions to the “final design” stage of the project. DEIS 2-41. The City reasonably expects this mitigation review would add additional time (e.g., mitigation evaluation and construction periods) and costs (e.g.,

construction of vibration dampeners or sound barriers, purchase of noise and vibration easements) to the project. The implementation of these mitigation measures would further complicate the logistics of the project.

Lastly, constructing a station at Alternative A would be significantly more expensive and would likely trigger a project delay of a number of years. This would increase the project's costs, as well as the City's borrowing costs and, coupled with the lower tax revenue projected for this alternative, adversely affect the financial benefits of this alternative (see Response 1a.2 below).

The City's conclusion that Alternative A is not logistically practicable does not necessarily rely on any single consideration. Rather, there are several significant and compounding challenges that, in concert, render construction of this alternative significantly more problematic than a comparable off-line station. The additional logistical challenges and risks that will have to be overcome to successfully construct Alternative A are not reasonable, especially when considered in relation to the other available alternatives. Accordingly, Alternative A is logistically impracticable.

Alternative B-CSX presents a unique suite of potentially insurmountable logistical challenges that also make this option impracticable. The challenges stem primarily from the fact that Alternative B-CSX is situated on property owned by CSX Transportation (CSXT) and occupied by a busy rail line that is used heavily by CSXT, Amtrak, and Virginia Railway Express (VRE). The CSXT rail line would have to be relocated at the City's expense. Courts have consistently held that federal law preempts the authority of state and local governments to condemn land owned by interstate railroads, such as CSXT. *See, e.g., Union Pac. R. Co. v. Chicago Tran. Auth.*, 647 F.3d 675, 683 (7th Cir. 2011). Thus, the City would have no legal remedy to obtain the land for Alternative B-CSX, and CSXT would be under no obligation to part with it willingly.

It is not reasonably likely that the City could obtain the CSXT-owned land necessary to successfully implement Alternative B-CSX. As detailed in the JPA, CSXT, the Virginia Department of Rail and Public Transportation (May 4, 2015 letter), and VRE (May 15, 2015 letter) have all expressed opposition to Alternative B-CSX due to its disruption to CSXT, Amtrak, and VRE rail traffic.¹⁷ Moreover, the value and use of that rail line has only increased since 2015, which makes it even less likely that CSXT (or its customers VRE and Amtrak) would not object to the City's proposal to acquire the land and relocate the CSXT lines (refer to March 11, 2019 Response for details).

Past experience with the railroad suggests that it nevertheless would take years of negotiation to settle on an agreement. The City reasonably expects that the costs of any such agreement would be prohibitive.¹⁸ The City would bear the expense not only of constructing the new station, but also the expenses of acquiring valuable land to relocate the CSXT tracks and of constructing those

¹⁷ Comments opposing Alternative B-CSX from VRE, Amtrak, and Virginia Department of Rail and Public Transportation are included in [Attachment B](#).

¹⁸ An estimate of the cost and schedule to construct Alternative B-CSX is summarized in Response 1a. That estimate assumes CSXT is a ready and willing partner. It is reasonable to consider that estimate to be a best-case scenario. There is a substantial risk that the actual costs and schedule delays would be much greater.

tracks. CSXT has also informed the City that it would expect all related costs and expenses—which are likely to be substantial—to be reimbursed by the City (April 30, 2015 and May 28, 2014 letters from CSX). Furthermore, the construction delay for the negotiation period would only cause the cost of the Potomac Yard Station construction project to increase and delay the planned development necessary to accommodate the City’s growth. For these reasons, Alternative B-CSX is not logistically practicable.

3. Technology

From an engineering standpoint, the technology exists to construct a Metrorail station at any of the four build alternatives. Technology is not a relevant basis upon which to differentiate among the alternatives.

4. Availability

To be considered practicable, an alternative must of course be “available and capable of being done.” 9 VAC 25-210-10. The Corps’ regulations¹⁹ further clarify that “[i]f it is otherwise a practicable alternative, an area not presently owned by the applicant *which could reasonably be obtained*, utilized, expanded or managed in order to fulfill the basic purpose of the proposed activity may be considered.” 40 C.F.R. § 230.10(a)(2). As discussed above, Alternative B-CSX is situated on land owned by CSXT. The City cannot condemn or otherwise reasonably obtain this land from CSXT. Thus, even if Alternative B-CSX were deemed practicable, it could nevertheless not be the LEDPA because it is not “available.”

D. Only Alternative B Satisfies the Overall Project Purpose

The practicability considerations discussed above must, of course, be evaluated “in light of overall project purpose.” 9 VAC 25-210-10; 40 C.F.R. § 230.10(a)(2). An option is not a true practicable alternative if it does not fulfill the overall project purpose. The JPA’s alternatives analysis carefully reviewed the four build options and concluded that only Alternative B meets the objectives of the project outlined in the Project Purpose statement. The additional information developed in response to the Department’s information requests reinforces that conclusion.

To reiterate, the overall Project Purpose is as follows:

To maximize access to local and regional transit to and from the Potomac Yard area along the U.S. Route 1 corridor for the greatest number of current and future residents, employees, and businesses in support of currently proposed and anticipated development in the area over the next several decades consistent with the adopted North Potomac Yard Small Area Plan, without excessive disruption of the current rail services while providing for the safety of workers and the general public.

¹⁹ The Corps’ regulations in 40 C.F.R. Part 230 are made applicable to the Department’s review by 9 VAC 25-210-80(B)(1)(g).

JPA 14.

In order to maximize access to transit to and from Potomac Yard for the greatest number of people, the station must be in the “sweet spot” that will support the greatest quantity of high-density development of the area. The southern end of Potomac Yard cannot support greater building height or density because it is already built out with medium-density neighborhoods and is hampered by FAA building height restrictions. The central portion of Potomac Yard (i.e., Landbays G and H) can support additional high-density development, but its potential is limited by the fact that many of the parcels are already developed, and FAA regulations restrict the height of buildings in this section. That leaves the northern portion of Potomac Yard—North Potomac Yard or Landbay F—as the most advantageous area for future high-density development. That area has the most land available to develop or redevelop, and most of the developable parcels are not burdened by substantial building height restrictions. The Project Purpose is met by situating the station as close to this area as practicable to induce the type of high-density development planned by the City in accordance with the NPYSAP.

Although the various alternatives may appear at first glance to be clustered within a similar geographic area, the Potomac Yard Metrorail station will not have dedicated parking and will be accessed primarily by pedestrians. Relatively short distances matter when the analysis is comparing *walking distances*.

Alternative A—which is the southernmost alternative—does not meet this purpose because it puts the Metrorail station outside of the reasonable, professionally recognized walking distance (up to one-half mile) of a sizeable portion of the most advantageous developable land at the northern end of North Potomac Yard.²⁰ Potomac Yard will fully build out eventually if Alternative A is constructed, but this development will be significantly delayed; density will be lower and less diversified (i.e., more residential in place of mixed-use); automobile traffic and congestion is anticipated to be more prevalent (i.e., less walkable); and the City’s tax revenues will be lower as a result of lower property values.²¹ This outcome is contrary to the City’s long-term plans outlined in the NPYSAP.

Alternative B-CSX is closer to the northern end of Potomac Yard. However, relocation of the CSXT tracks through five blocks of North Potomac Yard²² means that this alternative would support lower *volume* of high-density development in North Potomac Yard. As a result, this alternative would not maximize access to the Metrorail system for the greatest number of persons, thereby reducing the portion of the regional growth the City could absorb and lowering the City’s overall tax revenue (while also dramatically increasing the City’s station construction and debt service costs). This outcome also is contrary to the City’s long-term plans outlined in the NPYSAP.

²⁰ Refer to Fig. 8 of the City’s March 11, 2019 Response. The basis of the one-half mile walking distances assumption is explained in Response 1b.2 below.

²¹ See Responses 1a, 1b, and 1c below for a more detailed explanation of the conclusions summarized in this statement.

²² Refer to Figs. 9 and 10 of the City’s March 11, 2019 Response.

Alternative B is the only station location that is consistent with the Project Purpose. It is within walking distance of *every block* in North Potomac Yard, as well as the remaining developable parcels in Landbay G. Therefore, it is capable of supporting the maximum volume of sustainable, transit-oriented growth, high-density, mixed-use, walkable development in Potomac Yard. Alternative B also will provide walkable access to Metrorail for the majority of the existing homes and business in the southern end of Potomac Yard. Construction of Alternative B also will not present any unnecessary safety hazards or cause unreasonable disruptions to Metrorail service, which could adversely affect the public perception of the new station and the attractiveness of living or working in close proximity to the station. For these reasons, building a station at Alternative B fully supports the City's long-term plans outlined in the NPYSAP and incorporated in the Project Purpose.

The Department asked if the City could meet the project purpose with other alternatives by changing its Coordinated Development District (CDD) zoning for the site or revising the NPYSAP. It cannot. The City's land use planning and zoning decisions have been made primarily to take advantage of the beneficial circumstances in the northern end of Potomac Yard—namely, the large area of developable land under single ownership with few building height restrictions in close proximity to the existing Metrorail line. These circumstances cannot be replicated in other portions of Potomac Yard by any change to the City's small area plans or CDD zoning for the area. The City cannot create additional developable land from the existing neighborhoods in the central and southern portions of Potomac Yard and it cannot override the building height restrictions imposed by the FAA on the central portion of Potomac Yard. The City's land use planning and zoning decisions are designed to take advantage of the beneficial existing factual circumstances in North Potomac Yard; they do not create them.

Even if all four alternatives (A, B, B-CSX, and D) were objectively practicable in terms of cost, logistics, and technology, they must be practicable in light of the overall project purpose. Only Alternative B meets this criterion. It is therefore the LEDPA.²³

²³ The City previously demonstrated in the JPA and March 11, 2019 Response that aquatic impacts for Alternative B have been minimized by the maximum extent practicable consistent with 9 VAC 25-210-80(B)(1)(g) and 40 C.F.R. § 230.5(j). The No Build Alternative was rejected in the JPA because it fails to meet the Project Purpose.

II. Responses to DEQ Information Request

The City's responses to each of the questions in the Department's April 1, 2019 letter are provided below.

Information Request 1

1. Provide an alternatives analysis for Alternative A and B-CSX based on a zoning scheme that would maximize the high-density, high-value, transient oriented development at each alternative location and compare this to Alternative B.

Response 1: Summary of Revised Alternatives Analysis

The responses below detail revised analyses for Alternatives A, B, and B-CSX based on respective zoning analysis that would maximize development around each alternative station location. The key results are summarized in the following table.

*Comparison of Select Alternatives Analysis Factors
For Alternatives A, B, and B-CSX*

Alternative	Station Cost (millions)²⁴	Tax Revenue (millions)²⁵	Fiscal Impact Relative to Alt. B (millions)²⁶	New Office Space (M sq. ft.)²⁷	New Riders with Metro Access²⁸
Alt. B	\$320	\$2,771	-	4.1	23,238
Alt. A	\$398 (+25%)	\$2,205 (-\$566)	(-\$732)	2.8 (-1.3)	15,951 (-7,287)
Alt. B-CSX	\$563 (+76%)	\$2,255 (-\$516)	(-\$1,051)	3.1 (-1.0)	20,208 (3,030)

²⁴ Reflects total estimated budget cost to construct station. Refer to Response 1a.1 below for details.

²⁵ Reflects total net tax revenue over 40-year planning horizon generated from areas of Potomac Yard for which the new Potomac Yard Metrorail Station will influence future development (Landbays F, G, and H). Refer to Response 1a.2.1 below for details.

²⁶ Reflects sum of (1) reduced net tax revenue relative to Alternative B and (2) increased debt service relative to Alternative B. Refer to Response 1a.2.2 below for details.

²⁷ Reflects volume of new development in Potomac Yard that is projected to consist of high-value office space. Refer to Response 1c below for details.

²⁸ Reflects projected number of employees and residents in new development within walking distance of the station. Refer to Response 1c below for details.

Information Request 1a

- *A cost/revenue summary, including a comparison of each alternative and a statement as to whether each alternative is practicable based on cost, including revenue.*

Response 1a: Revised Analysis of Cost and Revenue for Each Alternative

In response to this request, the City has updated and refined the cost and revenue elements of the alternatives analysis to provide a more thorough basis to compare Alternatives A, B, and B-CSX. This revision primarily involved two tasks. First, the City refined the cost estimates for Alternatives A and B-CSX by incorporating greater detail than had been evaluated in the more preliminary cost estimates previously provided for these alternatives. Second, the City reevaluated the long-term tax revenue potential of each alternative by re-running the financial feasibility model, which was last updated to evaluate the alternative locations in 2015, using current information. To ensure that the City's preexisting land use planning and zoning decisions (e.g., the approved NPYSAP) do not bias any alternative, this revised analysis assumes that all necessary land use planning and zoning decisions have been made to maximize potential development in the vicinity of each of the respective alternative station locations (refer to Response 1b.1 for details).

Response 1a.1: Refined Cost Estimates for Alternatives A, B, and B-CSX

The City's refined cost estimates for Alternatives A, B, and B-CSX are summarized in the table below. The methodology and assumptions used to derive each of the values in the table are explained in the following sections.

Estimated Total Budget Costs (millions) for Alternatives A, B, and B-CSX

Alternative	Design-Build Cost (2018)	Other Costs (2018)	Total Cost (2018)	Cost Escalation (5%/yr)	Total Cost on Start Date	Increase from Alt. B
Alternative B (2018 Start)	\$214	\$106	\$320	\$0	\$320	-
Alternative A (2021 Start)	\$238	\$106	\$344	\$54	\$398	+25%
Alt. B-CSX (2024 Start)	\$280	\$140	\$420	\$144	\$563	+76%

Response 1a.1.1: Design-Build Station Construction Cost

The foundation for the City's design-build station construction cost assumptions is the competitively bid design-build contract awarded to Potomac Yard Contractors (PYC) in

September 2018.²⁹ The \$213.7 million contract provides actual costs in 2018 dollars for most elements of station construction that would be common to construction of the Potomac Yard Metrorail Station at any of the alternative locations. These actual contract costs were used to develop comparable construction cost estimates for Alternatives A and B-CSX.

The City's estimated \$237.6 million (2018\$) design-build cost for construction of a functionally similar station at Alternative A is detailed on pages 8 and 9 of its March 11, 2019 Response and the *Potomac Yard Metrorail Station Alternatives Cost Review* (March 10, 2019) attached thereto. To summarize that analysis, the City asked its consultant (Joe Butler of ButlerMatrix LLC) to prepare a Rough Order of Magnitude cost estimate to construct a station at Alternative A. The consultant itemized the costs included in the design-build contract for Alternative B and estimated the comparable costs for Alternative A. For station elements that would be common to both alternatives, the actual contract cost was used for the Alternative A estimate. Several costs, including site restoration and traction power work, were estimated to be lower for Alternative A. Other expected costs unique to Alternative A—such as construction of a protective shell and removal of contaminated soil—were added to the estimate. On balance, the consultant concluded that construction of a functionally similar station at Alternative A would cost \$23.4 million, or 10.9%, more than the contract cost for Alternative B.

In response to the Department's April 1 letter, the City tasked the same consultant with preparing an estimate for construction of a functionally similar station at Alternative B-CSX. While there would be many common elements of constructing a station at that location, this alternative entails numerous unique costs primarily associated with obtaining and working around CSXT's existing right-of-way. Those costs are expected to be extraordinarily high but are difficult for the City's consultant to estimate to a reasonable degree of certainty because they would be determined primarily by the future decisions of a third-party (CSXT) not involved in the project. For this reason, the exercise undertaken for the Alternative A estimate was not deemed to be a reasonable approach for estimating the design-build cost for Alternative B-CSX.

Searching for a more justifiable basis for estimating the design-build costs for Alternative B-CSX, the City revisited the estimates prepared for the Environmental Impact Statement (DEIS 5-2) and revised for the Federal Transit Administration (FTA) Record of Decision. Those estimates were developed in consultation with and were accepted by the FTA,³⁰ which is the agency in the best position to evaluate the estimated costs of obtaining land from CSXT and relocating an active rail line. Accordingly, the prior estimates accepted by FTA were deemed the most reasonable starting point for evaluating the potential costs of constructing a station at Alternative B-CSX.

The previous estimates accepted by FTA assumed that the cost of constructing a functionally similar station at Alternative B-CSX is substantially greater than Alternative B *before considering CSXT's costs* due to the relatively greater amount of track work, sitework, systems work that would be necessary to move the Metrorail tracks and station onto the existing CSXT right-of-way. The

²⁹ Press Release, Metro and City of Alexandria Announce Selection of Contractor for Potomac Yard Metrorail Station (Sept. 10, 2018) ([Attachment C](#)).

³⁰ Refer to Federal Transit Administration, Record of Decision at 4–5 (Oct. 2016) ([Attachment D](#)).

estimate also assumed that additional land would need to be acquired and that relocating CSXT's tracks would be a substantial additional expense unique to Alternative B-CSX.³¹ Combining the additional station construction and CSXT-related costs, the estimates relied on by FTA for its 2016 decision reflected that the total estimated cost of Alternative B-CSX would be 31% greater than Alternative B.³² This 31% cost differential between Alternatives B and B-CSX reflects the best available "apples-to-apples" evaluation of the incremental increase in costs that would be realized if the planned Potomac Yard Metrorail Station were constructed within the current CSXT right-of-way.

The City applied the same 31% cost differential ratio to develop an updated estimate of the cost of Alternative B-CSX. As with Alternative A, the City assumed that construction of a functionally similar station at Alternative B-CSX would be comparable to Alternative B in most respects. To account for the common elements between the stations, the Alternative B design-build contract cost (\$213.7 million) was assumed to apply to most major elements of constructing Alternative B-CSX. To also account for the cost of the additional track relocation, site work, and systems work identified in the prior estimate, the City assumed that the station construction costs would increase in the same proportion (i.e., 31%). This results in an estimated design-build station construction cost for Alternative B-CSX of \$280 million (i.e., \$213.7 million x 1.31) in 2018 dollars. This estimate is within the range of costs estimated in the DEIS and FTA Record of Decision for Alternative B-CSX, and the City believes it represents a reasonable and conservative estimate of the construction costs.

Response 1a.1.2: Other Budgeted Costs

The cost of the design-build contract is not, of course, the only cost that must be incurred to successfully construct a new Metrorail station. Other costs include paying the City's staff and consultants, purchasing station equipment not covered by the design-build contract (e.g., fare collection equipment), funding project management, conducting public outreach and communication, obtaining permits, and accounting for contingencies. Between costs actually incurred to date and projected through project completion, the City has budgeted \$106.3 million for these other costs. Thus, the total budgeted cost for constructing a station at Alternative B is \$320 million (i.e., \$214 million design-build contract cost + \$106 million in other budgeted costs).³³ The Alexandria City Council approved this budget figure on April 4, 2018.

³¹ Refer to DEIS 5-2, Tbl. 5-1, which breaks down the major cost categories for each alternative. Note that this section of the City's response evaluates only the estimated design-build costs for Alternative B-CSX. The CSXT-related costs are captured in the City's estimate of "Other Costs," which is discussed in the next section.

³² Refer to pages 4 to 5 of the FTA Record of Decision. The DEIS presented the cost estimates as a range. The FTA decision document included minor updates to those estimates and used 85% of the high end of the range for each alternative as the basis for comparing them. Alternative B-CSX was assumed to cost \$83 million (2016\$), or 31%, more than Alternative B.

³³ Memorandum from Mark B. Jinks, City Manager, to The Honorable Mayor and Members of City Council (April 4, 2018) ([Attachment E](#)).

The \$106.3 million in other budgeted costs is summarized in the table below.

Other Budgeted Costs for Alternative B

Cost Category	Budgeted Cost
Fare Collection Equipment	\$3,500,000
Art-In-Transit	\$250,000
Utilities	\$600,000
Design & Engineering Services	\$15,858,012
WMATA Project Management	\$11,600,000
Real Estate	\$6,150,000
Information Technology	\$3,700,000
Reimbursable Costs (CSX, Force Account)	\$1,125,000
Contingency	\$33,502,988
National Parks Service Mitigation Costs	\$15,000,000
City of Alexandria Costs	\$15,000,000

As with the design-build costs, the City used these actual budgeted costs as the starting point for estimating the related costs for Alternatives A and B-CSX. Most of these costs would reasonably be expected to be consistent across each alternative. Several of the costs are unique to Alternative B, but Alternatives A and B-CSX would involve other costs not included in the approved budget.

The City believes it reasonable to assume that the budgeted costs for Alternative A would be comparable to Alternative B and has maintained this cost as a constant between the alternatives. Alternative A would not require the National Park Service (NPS) Mitigation Costs and other wetland mitigation costs. However, this reduction would be offset by a series of other additional costs.³⁴ Because construction of Alternative A would not commence for at least three years (discussed further below), the budget would need to be increased to cover at least three additional years of City and WMATA staff, consultant expenses, and project management costs. The City also would have to reengage FTA and WMATA to develop specific noise and vibration mitigation measures that would have to be implemented. DEIS 2-41. Insurance costs are expected to increase based on the unprecedented construction of an online station over an active rail line. The City's land use planning and zoning documents, including the NPYSAP, would have to be amended to reflect the different station location. Lastly, the City believes it may be necessary to condemn expensive private residences in Potomac Greens (JPA 52) in order to construct a station at Alternative A. There are three independent reasons why condemning these residences to both construct and operate the station would be the best solution from a pure engineering standpoint.

³⁴ Since the FTA and National Park Service issued approvals for Alternative B in 2016, the City has incurred substantial sunk costs in preparation for building a station at that location. As a practical matter, much of that cost (e.g., design and engineering services, consultant costs, permitting costs, payments to design-build contractor) would have to be incurred a second time to prepare to construct a station at a different location. To allow a fair analysis of the alternatives, however, the City has not factored any such sunk or potentially duplicated costs into its respective cost estimates.

First, condemnation may be necessary to provide adequate room for staging equipment and materials to construct the station. Second, condemnation may be necessary to mitigate the long-term noise and vibration impacts. Third, the station will require adequate fire road access to the station (22' wide with turning radius for large ladder trucks), and therefore does not appear to be adequate space between the station footprint and the homes to accommodate a fire road. The legal expense and homeowner compensation costs alone would be sufficient to offset a reduction in NPS mitigation costs.

For reasons that have been discussed previously, the City anticipates that obtaining approval from CSXT to obtain its right-of-way and relocate its tracks would be prohibitively expensive—if possible at all. The additional budgeted costs necessary to successfully build a station at Alternative B-CSX are expected to include, at a minimum:

- Legal and staff expenses to negotiate an agreement with CSXT;
- Reimbursement of CSXT's staff, legal, and engineering review costs;
- Purchase of CSXT's property interest in its current right-of-way;
- Purchase or condemnation of high-value privately-owned land to the west of CSXT's current right-of-way to relocate CSXT's tracks;
- Demolition of structures within the relocated CSXT right-of-way;
- Environmental review and permitting for relocating CSXT tracks;
- Engineering and construction of relocated CSXT tracks;
- Mitigation and/or compensation for CSXT and its customers (Virginia Railway Express and Amtrak) adversely affected by the project; and
- An ample budget contingency to reflect the risk and uncertainty of this effort.

It must be reiterated that the City has no authority to condemn CSXT's property or otherwise compel it agree to the proposal and that CSXT will not benefit in any way from the Potomac Yard Metrorail Station. Due to the unequal negotiating positions, the City reasonably expects CSXT would demand a significant cost premium for CSXT's real property and any of CSXT's reimbursable costs. Lacking any other recent comparable examples to draw from or estimates from CSXT, the City again relies on the previously vetted cost estimates to provide the most reasonable basis for estimating CSXT-related costs. Accordingly, the City assumed for the purpose of this analysis that the other budgeted costs of Alternative B-CSXT would be 31% greater than Alternative B—or \$140 million (\$106 million x 1.31). Although this assumption is consistent with the Environmental Impact Analysis and FTA estimates, the City believes it is extraordinarily conservative.

Response 1a.1.3: Construction Cost and Budget Escalation

Annual cost escalation is a well-documented occurrence in the construction industry. Nationally, annual non-residential construction costs have been observed and projected by numerous sources

to hover at around 5% in recent years.³⁵ Construction cost escalations for the Washington, D.C. metropolitan area and Virginia generally have been higher. One source reported that recent construction costs for the metro area were observed to be increasing at several times the national average.³⁶ The two most commonly cited causes of these cost escalations are materials and labor costs. Materials cost increases are felt nationally, and material costs have increased as much as 7.4% in the past year.³⁷ However, increasing skilled and unskilled labor shortages can have acute regional impacts—and the metro region is experiencing a labor shortage that is driving up construction costs.³⁸ 67% of Virginia contractors reported that they had to increase their pay rates in 2018 due to difficulty filling positions and 88% of contractors expect to expand their hourly field staff and 80% will increase their salaried field personnel in 2019.³⁹ Compounding these problems, the incredible volume of recent and planned construction in the metro region has increased competition for contractors and further driven up costs.⁴⁰

Because the design-build contract and other budgeted costs for Alternative B were fixed in 2018, the City's estimates of the respective costs for Alternatives A and B-CSX are based on the same 2018 cost estimates. However, as a factual and logistical matter, construction of a Metrorail station at the Alternative A or B-CSX locations would not commence for several years. An accurate evaluation of the cost of Alternatives A and B-CSX must account the fact their estimated 2018 construction costs will escalate in a predictable manner between now and their respective construction start dates.

Planning, designing, and procuring materials and services for a Metrorail station is a major undertaking. The earliest date on which construction of a station at Alternative A reasonably could commence is late 2021. Several lengthy processes would have to be completed before construction

³⁵ Construction Analytics, *2019 Construction Economic Forecast – Nonresidential – Dec 2018*, available at <https://edzarenski.com/2018/11/23/2019-construction-economic-forecast-nonresidential-dec-2018/> (“Construction Analytics Nonresidential buildings inflation forecast for 2018 is 4.9%. Current reliable inflation forecasts range from 4.7% to 5.6%. Inflation in this sector has been at 4% or higher the last four years.”); Mortensen, *Construction Cost Index*, available at <https://www.mortenson.com/company/news-and-insights/construction-cost-index> (calculating approximately 5% annualized construct cost increase for last several quarters based on six-city index); Turner Construction, *Cost Index*, available at <http://www.turnerconstruction.com/cost-index> (calculating 2018 construction cost escalation at 5.86%). The resources referenced in this paragraph are collected in Attachment F.

³⁶ Refer to page 5 of the Memorandum in Attachment E.

³⁷ Associated General Contractors of America, *Construction Material Costs Increase 7.4 Percent As Contractors Continue to Be Squeezed by Tariffs and Rising Fuel Prices*, available at <https://www.agc.org/news/2018/10/10/construction-material-costs-increase-74-percent-contractors-continue-be-squeezed>.

³⁸ BisNow, *No End In Sight: Construction Costs Causing Headaches For D.C. Contractors, Developers*, available at <https://www.bisnow.com/washington-dc/news/construction-development/no-end-in-sight-rising-construction-costs-causing-headaches-for-dc-contractors-developers-97124> (Jan. 25, 2019).

³⁹ Associated General Contractors of America, *2018 Workforce Survey Results: Virginia*, available at https://www.agc.org/sites/default/files/Files/Communications/2018_Workforce_Survey_Virginia.pdf.

⁴⁰ MGAC, *2017/2018 Construction Market Report: Washington DC Metro Region*, available at *2017/2018 Construction Market Report: Washington DC Metro Region* (projecting the high demand for contractors to continue through 2019).

could begin. First, the City would have to go through a lengthy land use planning and zoning process to revise its small area plans to allow a station to be constructed within the Potomac Greens neighborhood. Second, approvals would need to be obtained from the FTA and National Park Service for a station at that location, which potentially could trigger a new round of environmental study and review. At a minimum, the environmental review would entail further consultation with FTA and WMATA to develop noise and vibration mitigation measures for adversely affected homes in the Potomac Greens neighborhood. Third, WMATA would have to conduct a public bid, review, and contracting process to select a design-build contractor, according to its procurement policies and practices. Fourth, the selected contractor would have to prepare the design and engineering for the station and mobilize for construction. Lastly, the City potentially would have to initiate condemnation proceedings of homes adjacent to the station location in order to construct the station. Although some of these steps could proceed concurrently, it is very conservative to assume that construction could not commence prior to fall of 2021.

The steps mentioned above also would need to be completed to begin construction of a station at Alternative B-CSX. On top of that, the City would have to complete negotiation with CSXT to obtain its approval to implement Alternative B-CSX. Upon completion of those negotiations, the City would have to purchase or condemn land on which to relocate the CSXT tracks. Next, the relocated CSXT tracks would have to be constructed before the tracks currently in use could be taken out of service to allow station construction to begin at the site. A reasonable best-case scenario would see construction of Alternative B-CSX starting in late 2024.⁴¹

The Potomac Yard Metrorail Station project will be subject to the same factors (i.e., increasing material costs and labor shortages) that have produced annual construction cost escalations of 5% nationally. Given that even higher escalation rates have been observed and projected to continue in the Washington metropolitan area, a 5% annual construction cost increase is a reasonable assumption for the next few years. Accordingly, the City's cost estimates for Alternatives A and B-CSX assume an escalation of 5% per year from 2018 until the projected construction start date. For Alternative A, an expected three-year delay adds \$54 million to the cost. The six-year lead time for Alternative B-CSX is projected to add \$144 million to its cost.

Response 1a.1.4: Cost Practicability Determination

Because the cost of the Potomac Yard Metrorail Station is substantially greater than the comparable costs of other stations, any alternative that is 20% more costly than an available alternative is unreasonably expensive. The actual budgeted cost of constructing a station at Alternative B is \$320 million. The estimated cost of Alternative A is 25% higher (\$398 million) and the cost of Alternative B-CSX is 76% higher (\$563 million). This analysis demonstrates that the only practicable alternative is Alternative B.

⁴¹ Refer to the pages 23 and 24 of the March 11, 2019 Response for details. The City explained there that it would take approximately six to nine years to commence construction of a station at Alternative B-CSX. The six-year delay used in this cost estimation is the low end of that range.

Response 1a.2: Updated Tax Revenue and Economic Benefit Analysis

As discussed above, the overall project purpose is to construct a Metrorail station that maximizes high-density development of Potomac Yard in support of the City's long-term urban land use planning and economic development goals, as embodied in the NPYSAP. A Metrorail station that facilitates the most high-density, high-value, mixed-use development in Potomac Yard also generates the most tax revenue and provides the greatest economic benefit to the City and its residents.

The presence of a Metrorail station significantly increases potential public amenities by creating market value (higher rents) and reducing development cost (such as less required parking). In addition, all other things being equal, absorption (the amount and pace of development) near Metrorail stations is faster than non-Metro locations. Office rents at Metrorail stations in Alexandria are almost one-and-a-half times greater than comparable non-Metrorail locations. As such, ***the ability for the developer to contribute significantly toward public amenities increases significantly, almost tenfold, when the Metrorail station is constructed.*** While the current economic state of commercial real estate development makes a calculation speculative, accounting for developer cost and profit margin, ***the construction of a new Metrorail station will increase the value of the land by as much as \$240 million, creating value [i.e., tax revenue] that can be spent toward community benefits.***

NPYSAP 115 (emphasis added); *see also id.* 5 (“The Plan requires additional office development in order to increase the real estate tax base.”).

The City generated revised data to respond to the Department's request for an updated revenue analysis. That data, which is summarized in the following table, confirms that the tax revenue and economic benefits of Alternative B far exceed any other alternative.

Comparison of Revenue Impacts (Millions) of Alternatives B, A, and B-CSX⁴²

Alternative	Net Tax Revenue	Total Debt Service	Lost Tax Revenue	Increased Debt Service	Impact Relative to Alt B
Alternative B	\$2,771	\$354	-	-	-
Alternative A	\$2,205	\$521	\$566	\$167	<i>(-\$733)</i>
Alternative B-CSX	\$2,255	\$889	\$516	\$535	<i>(-\$1,051)</i>

⁴² Refer to *Potomac Yard Metrorail Station Cost/Revenue Summary* (April 2019) (“*Cost/Revenue Summary*”) ([Attachment G](#)). The data in this table are explained in Response 1a.2.1.

Response 1a.2.1: Revised Net Tax Revenue and Debt Service Projections

The City previously submitted a comprehensive *Potomac Yard Metrorail Station Financial Feasibility Analysis Update* (JPA Att. G), dated April 2015, which found that Alternative B yielded the highest net tax revenues for the City. The report evaluated net tax revenues from all possible sources (e.g., real estate taxes, sales taxes, meal taxes) for the alternatives. In the City's March 11, 2019 Response, we also provided updated projections of tax revenue from induced office and residential development that captured most of the relative tax revenue and other economic benefits of the various alternatives. Consistent with the April 2015 report, that data showed that the higher-density development made possible by construction of Alternative B would generate substantially increased net revenues compared to any other alternative.

To provide a more comprehensive response to the Department's request for an updated analysis of revenue, it is necessary to update the April 2015 report. The City asked the consultant that prepared the April 2015 report (WSP USA, formerly Parsons Brinckerhoff) to update the analysis using the latest available information. The resulting report, *Potomac Yard Metrorail Station Cost/Revenue Summary*, presents the results of that analysis over a 40-year planning horizon. The analysis employed a new version of the model used for the April 2015 analysis.⁴³ The model's methodology and assumptions are detailed in the attached report and summarized as follows.

For each alternative, the model tallied revenue from three sources.⁴⁴ First, the model captures projected net tax revenues from (1) real estate property taxes; (2) sales taxes; (3) hotel taxes; (4) meal taxes; and (5) business license and property taxes generated by new development in Potomac Yard. These are presented as net tax revenue because the model subtracts the cost of additional services (e.g., schools) the City would have to provide to the new development. Second, the model totals tax revenue from the special tax districts in Landbays F, G, H, and portions of I established to fund the Metrorail station. Third, the model accounts for contribution commitments made by developers in Potomac Yard.

The model utilized the station construction budget costs summarized above in Response 1a.1. Accounting for the various sources of funding and financing that will be used to cover these costs, the model calculated the total debt service cost for each alternative.⁴⁵

The land use and development data input into the model was provided by the City's Department of Planning and Zoning. As discussed further in Response 1b below, the City created land use and development projections for each developable block in Potomac Yard under Alternatives A, B, and B-CSX. For each block, the projections identify the type (e.g., residential, office) and square footage of development, as well as the year in which the development (or, for some blocks, redevelopment) is anticipated to occur. The model therefore accounts for the temporal element of when tax revenues from new development are expected to be realized.

⁴³ Note that this model is primarily used by the City to perform financial due diligence analyses to assist in planning decisions. It was not developed solely for the purpose of this application.

⁴⁴ Refer to Table 1 of the *Cost/Revenue Summary*.

⁴⁵ Refer to Table 4 of the *Cost/Revenue Summary*.

Synthesizing these data and assumptions, the model calculated the total net tax revenues and debt service costs for each alternative over the 40-year planning horizon.⁴⁶

The revised analysis demonstrates that over the planning horizon Alternative B will generate an additional **\$566 million** in net tax revenues compared to Alternative A and **\$516 million** compared to Alternative B-CSX.⁴⁷ However, net tax revenues do not tell the full economic story. Alternatives A and B-CSX also have higher debt service costs that the City must bear. To assess the true economic impact of these alternatives, the lost net tax revenue must be added to the increased debt service cost. If Alternative A is constructed, the total impact on the City is the loss of **\$733 million**⁴⁸ that would be realized under Alternative B. The economic impact of Alternative B-CSX is the loss of **\$1.1 billion**.⁴⁹

Response 1a.2.2: Economic Impact of Lost Tax Revenue and Increased Costs

The \$733 million to \$1.1 billion in lost tax revenue and additional, unplanned costs to the City would have significant impacts to the City with regard to the delivery of core government services and the execution of projects and priorities which are vitally important to the City's residents and businesses. There are numerous ways to demonstrate the impact of the loss of these dollars to the City, including comparing it to other major projects and identifying priorities which would not be realized should these funds be lost or need to be reallocated.

For example, the City is currently engaged in the legislatively mandated mitigation of its combined sewer system—a generational infrastructure project that is, by far, the largest capital project the City has undertaken. By way of comparison, the fiscal impact to the City that would be incurred by building the station in an alternate location is the equivalent to the cost of one or two CSO projects.

In addition, there are numerous other projects and priorities that would be impacted by the fiscal impacts of moving the location of the station. The City is committed to making Alexandria an affordable and livable community, and our ongoing investment in affordable housing is key to this commitment. The estimated \$733 million to \$1.1 billion in lost revenue and additional costs to the City could fund approximately 1,800 units of affordable housing (60% Area Median Income) in our community. By the same token, as both an older community and a growing community, Alexandria is facing a current and future school capacity crisis. The estimated \$733 million to \$1.1 billion in lost revenue and additional costs to the City could fund the construction of a new high

⁴⁶ The *Cost/Revenue Summary* presents additional data, including decade-by-decade revenue projections, that further illustrates the economic differences in the alternatives.

⁴⁷ To reiterate, the “net tax revenue” output of the model is total tax revenue from new development less the cost of providing City services to that development. It does not account for debt service.

⁴⁸ \$566 million in lost tax revenue + \$167 million increased debt service = \$733 million. Refer to Figure 5 of the *Cost/Revenue Summary*.

⁴⁹ \$516 million in lost tax revenue + \$535 million increased debt service = \$1.1 billion. Refer to Figure 5 of the *Cost/Revenue Summary*.

school, middle school, three elementary schools, and necessary renovations to numerous existing City school facilities, which would address the City's current and future school capacity needs.

Along with the fiscal impacts of building the station in an alternate location, the potential for a three- to six-year delay in the construction of the Potomac Yard Metrorail Station would have significant negative impacts for current and future development in and around the site. Specifically, the Virginia Tech Innovation campus, which is key to the Amazon HQ2 project, will be sited in this area and the Metrorail station was key to their choice of location. A three- to six-year delay in the delivery of the Metrorail station would almost certainly be viewed negatively by the residents and businesses currently anticipating this station, as well as creating a chill for planned and future development in the area.

Information Request 1b

- *Graphics which depict alternative zoning layouts.*

Response 1b: Projected Development Patterns Based on Alternative Zoning Layouts

As requested, Attachment H includes alternative zoning layouts and projected development patterns for Alternatives A, B, and B-CSX. Two graphics are provided for each alternative. The first shows the projected development patterns in the vicinity of each station location—assuming that all necessary zoning decisions have been made to maximize development in that scenario. The graphics depict the following information for each alternative:

- Station location;
- The assumed walking radii (1/4 and 1/2 mile from the station center);
- For each developable block within Landbays F, G, and H
 - Projected date on which the block will be developed (or redeveloped);
 - The projected type of development (Residential, Office, Retail, Hotel, or School);
 - The square footage of the development.

The second set of graphics provide an overlay of the FAA height restrictions with respect to each alternative.

These graphics were prepared by the City's Department of Planning and Zoning and embody their professional judgment and experience with urban land use planning and economic development within the City. The information reflected in these graphics serve as the basis for the tax revenue analysis discussed in Response 1a.2 and, more importantly, whether an alternative meets the overall Project Purpose. The key methods and assumptions employed to develop the data in these graphics are summarized below.⁵⁰

⁵⁰ Response 1c applies the information reflected in these graphics to evaluate each alternative's ability to meet the Project Purpose.

Response 1b.1: Zoning Decisions Will Maximize Development

It is important to remember that the development of Potomac Yard will primarily be undertaken by private developers. The City can use its zoning and other authorities to prohibit or encourage certain land uses and densities by developers, but market forces ultimately will dictate the actions of these private parties.

In this case, it is the City's intent to maximize development of Potomac Yard. For its evaluation of Alternatives A and B-CSX, the City assumed that zoning and other authorities *within the City's reasonable control* would not act as an impediment to high-density construction in proximity to those locations. That is, this analysis assumes for each alternative that the City would permit tall buildings with a mix of residential and commercial uses to be constructed throughout Potomac Yard and in the same manner as it would for Alternative B.

There are, of course, limitations that are not within the City's control. The first is that building heights throughout much of Potomac Yard are limited by federal authorities. In the central and southern portions of Potomac Yard, FAA restrictions effectively limit building heights to as low as 100 feet (see discussion in Response 1b.4). In North Potomac Yard, building heights vary 80 to 250 feet, with maximum building heights being lower for parcels adjacent to the George Washington Memorial Parkway under an agreement with the NPS to protect views.⁵¹ The FAA and NPS height restrictions have been incorporated into the development projections and are a factor in the square footage totals for each parcel (i.e., taller buildings allow for higher square footages). The second limitation is market forces. Even if building heights were theoretically unlimited, the City cannot compel higher-density development than the market will bear. For example, a developer cannot be forced to build a 250-foot tall office building far outside the walking distance of a Metrorail station if the market's preference is for lower density and residential use under those circumstances.

Response 1b.2: Walking Distance to a Metrorail Station

The walking distance metric employed in this analysis have been discussed several times previously.⁵² To briefly reiterate, the conventional metric for land use and transportation planning is that patrons will be willing to walk between one-quarter mile (5-minute walk) and one-half mile (10-minute walk) at access public transportation. These are commonly used metrics supported by multiple sources.⁵³ WMATA's Station Area Planning Guide (2017) assumes that one-quarter mile is an acceptable walking distance, that ridership begins to decline at distances approaching one-half mile, and that there is a severe drop in usage beyond one-half mile. Relying on these

⁵¹ Refer to page 26 of the March 11, 2019 Response and Figure 4.5b on page 40 of the NPYSAP (showing maximum building heights for all blocks).

⁵² Refer to DEIS (p. 2-47), JPA (p. 37) and March 11, 2019 Response (p. 4-5).

⁵³ E.g., R. Daniels, *Explaining walking distance to public transport: The dominance of public transport Supply*, *J. of Transport and Land Use*, available at <https://jtl.org/index.php/jtl/article/view/308/338>; Federal Highway Administration, *Pedestrian Safety Guide for Transit Agency*, available at https://safety.fhwa.dot.gov/ped_bike/ped_transit/ped_transguide/ch4.cfm. These cited resources are included here as Attachment I. Refer also to the U.S. EPA source quoted in footnote 2 above.

conventions, the City assumes that the reasonable walking distance to the Potomac Yard Metrorail Station is one-half mile but that station usage will be highest within one-quarter mile. Land uses are also very sensitive to the proximity to the Metrorail station, particularly office uses.

The graphics depict the one-quarter and one-half mile radii around alternative Metrorail station locations. It is assumed that blocks within the one-half mile radius are within the catchment area of the station. Blocks outside of that radius are assumed to be served substantially less by the station and therefore cannot support the same level of high-density development and will generally take longer to develop.

Any person living or working within walking distance of the station is presumed to have *access* to the station for the purpose of evaluating an alternative's consistency the Project Purpose. As previously discussed, the Metropolitan Washington Council of Governments and WMATA maintain tools that can be used to predict what proportion of persons with access to a station will be daily riders.⁵⁴ For this information response, the City has revised its calculations of the number of persons that will have *access* to the station under the respective alternatives, but it has not utilized those tools to revise the previous ridership projections. Although maximizing ridership for the new station is an important goal, maximizing *access* to the new station—meaning the number of people who live and work within walking distance—is more significant to fulfilling the Project Purpose.

Response 1b.3: Property Values and Development Rates Increase with Proximity to Metrorail Station

Consistent with the walking distance metric employed above, the City assumes that proximity to a Metrorail station is an attractive amenity and is the preferred location for redevelopment. Especially within the one-quarter mile radius, land is more likely to develop sooner, attract higher-value office space development, and encourage higher density (i.e., taller buildings). These assumptions are consistent with studies of the development trends in the Washington metropolitan area.⁵⁵ They also are consistent with the development patterns and assessed property values the City has observed around the four other Metrorail stations in Alexandria (Braddock Road, King Street-Old Town, Eisenhower Avenue, and Van Dorn Street).

Proximity to the alternative Metrorail stations affects several parameters reflected in the graphics and the related analysis. It is generally assumed that blocks closest to the station will develop on an earlier date and will have a higher density (i.e., more square feet) of predominantly office space. The property values assigned to these blocks for the purpose of projected tax revenues will be higher to reflect the predominant office-space use and the additive value of proximity to Metrorail. As the distance from the station increases between one-quarter and one-half mile, the relative proportion of residential development increases as office use decreases, property values begin to

⁵⁴ Refer to pages 13 and 14 of the March 11, 2019 Response.

⁵⁵ Refer to pages 4 and 5 of the March 11, 2019 Response.

decrease, and development dates extend further into the future. Outside of the half-mile radius, development is assumed to be predominantly lower-density residential and occur later.

The projected year of development for each developable block is based on three factors: (1) availability of infrastructure; (2) market (i.e., demand for new buildings); and (3) city and regional market absorption rate (i.e., rate at which new and vacated units are leased or sold). Phasing incorporates historical market shifts over time and the anticipated market absorption based on the City absorption rates. Based on our experience within the City and region, the more desirable/ preferred location, which is within one-quarter mile of the station, with the highest rents and return on investment will be the first to develop. This is generally due to the fact that higher rents can be achieved enabling projects within a one-quarter mile to be more viable. This is also the most desired and preferred location, particularly for offices.

Response 1b.4: Effect of FAA Regulations on Building Heights

As previously discussed,⁵⁶ FAA regulations effectively limit the height of buildings in the central portion of Potomac Yard—including most of Landbay G and relatively smaller portions of Landbays H and F. The FAA regulations in 14 C.F.R. Part 77 are intended to maintain the safety of air traffic and include special provisions that are triggered for construction activity (e.g., use of cranes) and buildings or other structures erected in close proximity to a public use airport. The regulations define “imaginary surfaces” that extend out from a public airport’s runways. 14 C.F.R. § 77.9(b). Of particular relevance here, one of the imaginary surfaces starts at ground level at the end of the runway and gradually increases in height with distance from the runway. Any proposed activity or building that will extend into an “imaginary surface” is “presumed” to be a “hazard to air navigation.” *Id.* § 77.15(b). Notice must be provided to the FAA, which will conduct a study to determine if the activity or building will present a hazard to air navigation and what modifications—typically meaning the building height must be reduced—are necessary to remove the hazard.

Potomac Yard is approximately one-half mile south of the Reagan National Airport. Aircraft arriving and departing from Runway 4/22 fly directly over Potomac Yard (approximately one-half mile from the edge of the runway to Potomac Yard), and the imaginary surface extending from this runway is as low as 100 feet above Potomac Yard.⁵⁷ The City formed a study group in 2012 to evaluate the impact of the FAA regulations on development in Potomac Yard. The group included representatives from the City, FAA, Metropolitan Washington Airports Authority, Reagan National Airport, and the military. The group’s final report determined that development within Potomac Yard has the potential to interfere with (1) instrument approach and departure airspace for all three runways; (2) the visual approach airspace for Runway 4/22; (3) the airport’s radar system; and (4) the airport’s communications system.⁵⁸ The report “encouraged” developers to design their buildings to “eliminate or mitigate potential impacts” to the airport—namely by

⁵⁶ Refer to page 5 of the City’s March 11, 2019 Response.

⁵⁷ Refer to Figure 7 of the City’s March 11, 2019 Response.

⁵⁸ *Potomac Yard Study Group Preliminary Review* (June 2013), included with this response as Attachment I.

limiting heights—and provided that any buildings that are proposed to exceed the maximum heights would be subject to “formal Part 77 airspace review” by the FAA.

The City cannot make long-term land use planning and zoning decisions on the remote *possibility* that the FAA will approve building heights that exceed its height restrictions. Based on past experience, the FAA may issue Determinations of No Hazard for *limited* intrusions into protected airspace, but it is not reasonable to assume the FAA would approve large-scale high-density development of tall buildings in the flight path for Runway 4/22—particularly in light of the potential hazards identified in the 2013 study group report. Furthermore, the City is not at liberty to ignore the FAA building height restrictions. Those restrictions are incorporated in the NPYSAP (p. 39–40) and zoning ordinance, as required by the Virginia Code. Va. Code § 15.2-2294; *see also id.* § 5.1-25.1.

Response 1b.5: Existing Development Is Not Relevant to a Comparison of Alternatives

The graphics and related calculations do not account for existing development in Potomac Yard. The location of the new station will not change preexisting development patterns and it will not materially affect the tax revenues from existing development. Because development totals and tax revenues from developed portions of Potomac Yard are a static variable that do not provide any basis for comparing alternatives, these areas are shaded gray on the graphics and generally do not factor into the analysis.⁵⁹

Information Request 1c

- *An evaluation of each alternative’s ability to meet maximum access and ridership based on an achievable zoning which maximizes the performance alternative.*

Response 1c: Metrorail Access Under Each Alternative

Utilizing the assumptions discussed above and updated data developed in response to the Department’s request, the City has prepared a refined evaluation of the ability of Alternatives A, B, and B-CSX to maximize (1) access and ridership to the Potomac Yard Metrorail Station and (2) high-density development in Potomac Yard consistent with the NPYSAP. However, as a practical matter these are mutually dependent factors. The only way to maximize access and ridership for the new Metrorail station is to increase the number persons living and working within walking distance—which means maximizing development. Conversely, the type of high-density

⁵⁹ To present a more complete picture, calculations of development totals and tax revenues have been prepared for all areas within one-quarter and one-half mile of the alternative station locations, which may include portions of Landbays F, G, H, I, J, and A, and can be found in the attachments to this response. Totals presented as “Excluding Existing Development” reflect only future development within Landbays F, G and H. These latter totals provide the primary basis to draw conclusions about the impacts of the respective alternatives.

development planned in the NPYSAP can only be maximized in areas with walkable access to the station. The results of this analysis are summarized below.

Response 1c.1: Alternative A

Construction of a station at Alternative A is projected to support total new development of 2.8 million square feet of office space and 4.3 million square feet of residential space in Potomac Yard. A total of 9,986 new employees and 5,893 new residents will have walkable access to the station under this scenario.⁶⁰ The future development potential of this alternative is limited by the fact that much of the area in closest proximity to this station is previously developed residential housing. Additionally, the prime land available for development within the one-quarter mile of this location is limited by FAA building height restrictions over which the City has no control. This alternative also leaves the bulk of the highest value developable land in North Potomac Yard either outside of the most desirable one-quarter mile radius or outside of walking distance altogether. Those areas will take longer to develop and support lower density, which together will adversely affect the City's net tax revenues.

Response 1c.2: Alternative B

Construction of a station at Alternative B is projected to support total new development of 4.1 million square feet of office space and 4.3 million square feet of residential space in Potomac Yard. A total of 14,490 new employees and 8,748 new residents will have walkable access to the station under this scenario.⁶¹ The fundamental advantage of Alternative B over the other alternatives is that it is within walking distance of *every* developable parcels in Potomac Yard—including the higher value areas in North Potomac Yard that are not subject to FAA building height restrictions. This allows Alternative B to support 55% more new office space and nearly 5,000 additional new employees with access to Metrorail in comparison to Alternative A. Although Alternative A produces roughly the same volume of new residential space, Alternative B allows higher-value residential space because *all* of those new residences will have walkable access to the station. That means those residences will have higher property values and generate more tax revenue for the City.

Response 1c.3: Alternative B-CSX

Construction of a station at Alternative B-CSX is projected to support total new development of 3.1 million square feet of office space and 4.7 million square feet of residential space in Potomac Yard. A total of 10,885 new employees and 9,323 new residents will have walkable access to the station under this scenario.⁶² Under this scenario, the CSXT right-of-way and tracks would have to be relocated through five blocks in North Potomac Yard. To maximize the potential theoretical development around this alternative, the City assumed that the existing street pattern in the immediate vicinity of the relocated tracks would be altered to maximize the space available for

⁶⁰ Data from the City's Department of Planning and Zoning is summarized in [Attachment K](#).

⁶¹ Data is detailed in [Attachment K](#).

⁶² Data is detailed in [Attachment K](#).

development.⁶³ Nonetheless, Alternative B-CSX does not generate the same quantity of new office space as Alternative B. Although this alternative supports some additional new residential space, several hundred new residents in Landbay H would fall outside of the walkable distance to the station. Altogether, a station at Alternative B-CSX would be accessible to more than 3,000 fewer new residents and employees than Alternative B. Additionally, due in large part to the delayed construction start date for this alternative, the new development in this scenario would be delayed significantly.

Response 1c.4: Comparison of Alternatives

As this analysis demonstrates, only Alternative B satisfies the Project Purpose of “maximiz[ing] access to local and regional transit to and from the Potomac Yard area . . . corridor for the greatest number of current and future residents, employees, and businesses the next several decades consistent with the adopted North Potomac Small Area Plan.”

Comparison of Supported Development in Potomac Yard and New Metrorail Rider Access for Alternatives B, A, and B-CSX

Alternative	New Office / Res. Space (Mil. Sq. ft.)	Difference from Alt. B	Increase in Metro Access (Workers & Residents)	Difference from Alt. B
Alternative B	4.1 / 4.3	-	23,238	-
Alternative A	2.8 / 4.3	(-1.3) / 0.0	15,951	(-7,287)
Alt. B-CSX	3.1 / 4.7	(-1.0) / 0.4	20,208	(-3,030)

Information Request 2

2. *Provide the following information pertaining to the logistics and technology of Alternative A. The March 11 additional information response lists safety factors associated with Alternative A and states that it is technologically possible to construct Alternative A but not practicable as a result of the hazards and uncertainties caused by the construction methods.*
- *Section 3.2.1.1 of the Analysis of Alternatives states that constructing Alternative A with the protective shell would require 48-weekend shutdowns ultimately delaying the project.*

⁶³ This altered street pattern is reflected on the Alternative B-CSX graphic in [Attachment H](#).

Information Request 2a

- *How long would Metrorail services have to be shut down to construct Alternative A without the protective shell? Is this practicable?*

Response 2a: Constructing Alternative A Without a Protective Shell Is Not Feasible

Constructing a Metrorail station at Alternative A without a protective shell theoretically could be accomplished in either of two ways: (1) Blue and Yellow line service could be shut down for the duration of construction (two to three years), or (2) station construction could take place only during non-operating night and weekend periods (potentially 10 or more years). Neither option presents a practicable alternative for the reasons spelled out below.

It must first be reiterated that there is no feasible way to construct a Metrorail station around an operating rail line without extraordinary mitigation measures, such as a protective shell (also referred to as a “protective structure”) or rail line shutdown. Requiring construction workers to operate within the right-of-way of an operating railroad to construct a station would present an extreme safety risk both to the workers and to Metrorail passengers. Construction sites are inherently hazardous locations under the best conditions, which is why the public is generally excluded from such sites and why the construction industry implements numerous measures required by regulations and best practices to protect the health and safety of its workers. As discussed in the Joint Permit Application, allowing high-speed train traffic through an active construction site compounds the existing hazards inherent to construction and creates new ones. A protective shell is required to protect the railroad from falling construction materials that could damage trains and injure passengers. A related but no less important benefit is that the protective shell creates a relatively safer working environment for construction workers, who would be working in close proximity to high-speed trains and the electrified rail without a physical barrier in the absence of the structure.

One theoretical option to construct Alternative A *without* a protective shell would be to shut down the Blue and Yellow lines for the duration of the construction period. It is estimated that it would take two to three years to construct a station at Alternative A if Metrorail traffic could be suspended so that it could be built more like a traditional “off-line” station.⁶⁴ A shutdown of this duration would represent, *by far*, the longest line shutdown in Metrorail history.

It is not practicable to shut down the Blue and Yellow lines for two to three years. The extended shutdown (107 days) planned for this summer is the longest and most logistically challenging shutdown ever undertaken for the Metrorail system. WMATA evaluated its alternatives, including performing all the work on nights and weekends, and concluded that the unprecedented shutdown was necessary because it was the least disruptive option to repair the existing station platforms at

⁶⁴ This two- to three-year construction estimate assumes that the major elements of a station at Alternative A would take roughly two years to construct, which is the length of time PYC has scheduled to construct an off-line station at Alternative B. Additional time may be necessary to construct Alternative A due to the logistical constraints of with operating within a substantially smaller footprint, as well as potential additional noise and vibration mitigation measures that may have to be installed.

the six Blue and Yellow line stations at issue. An extensive and costly regional planning effort is in process to mitigate the impact on the approximately 17,000 passengers that use these lines during weekday rush periods and to entice affected riders to return to Metrorail when the shutdown ends.⁶⁵

It is not reasonable to burden the same commuters with a second and significantly longer shutdown to facilitate construction of a station at Alternative A. Shutting down the line for this period does not represent an “available” alternative construction method because WMATA management has determined that it would not be acceptable to shut down the Yellow and Blue lines for up to three years due to the long-term impacts to their customers. Furthermore, the shutdown would violate WMATA’s Major Outage Guidelines, which provide that no station should experience more than one major outage in any three-year period. In this case, the two “major outages” would be the two longest station outages in system history.

A lengthy shutdown also would impose substantial additional costs on the City. The mitigation measures to be implemented for the 107-day shutdown this summer, such as providing additional bus service for affected passengers, are estimated to cost WMATA \$3.3 million, and the City and Commonwealth are sharing an additional \$2.7 million in costs. The cost of mitigating impacts on Metrorail riders from a three-year shutdown of the Yellow and Blue lines in the vicinity of Potomac Yard has not been estimated, but it would be substantial. Shifting passengers from Metrorail to other forms of transportation, namely private automobiles and buses, for three years also would have a predictable adverse impact on traffic congestion in the City and in the region more broadly. A multi-year shutdown of access to Metrorail for this many riders would make it difficult if not impossible to re-attract those riders to the Metrorail system at the completion of the project, after they had established modified long-term commuting habits. This is contrary to the goal of increasing Metrorail ridership in the region.

A second theoretical option to construct Alternative A without a protective shell is to construct the station in a piecemeal fashion entirely during nighttime hours and weekend shutdown periods. This option is not logistically or financially practicable, and it creates substantial additional environmental impacts. There is no precedent for constructing an entire rail station exclusively during nights and weekends, which makes it challenging to predict how long it would take to construct the station. However, WMATA has ample experience with night and weekend work to complete projects that are much smaller in scale. To close a station to perform major maintenance or similar work, it typically takes one hour to shut down the station and make it safe for workers. It then takes workers another half-hour to mobilize before work can begin. At the end of the work, it general takes another half-hour to demobilize and another hour to prepare the station to reopen. That would leave only about a two-hour window per nighttime for construction. Weekend shutdowns typically afford only a maximum 36-hour window in which active construction could take place.

Based on the length of the windows available for night and weekend construction and the inefficiencies inherent in fitting construction into these short windows, the project team reasonably estimates that it would take at least 10 years to construct the station only during such periods. This

⁶⁵ WMATA, FY2020 Station Platforms Project (Dec. 13, 2018) ([Attachment L](#)).

protracted construction timeline would increase the cost of construction dramatically due to, among other things, the increased time that labor and heavy equipment would need to be procured, the inefficiencies of constructing during short windows, and natural construction cost escalations over time. Over such a long construction timeline, it becomes difficult to predict what other factors may affect construction logistics or costs, including changes in material availability or cost, changes in regional transportation needs, changes in technology, or changes in regulatory requirements or station design standards.

Construction during non-revenue hours (at night) also would dramatically increase the environmental impacts of the project on local residents. As discussed previously, a new station at Alternative A would have to be shoehorned into the Potomac Greens neighborhood. Some homes would be 100 feet to the edge of the station—and much closer to the limits of disturbance for construction. Constructing the station would subject residents adjacent to the construction site to noise, vibration, and light impacts associated with active construction for a period of 10 years—mostly during nighttime hours. The human health and other environmental impacts from that approach to construction would not be acceptable.

Information Request 2b

- *Can construction of Alternative A coincide with the Planned Metrorail Track Work shut down of the Blue and Yellow line from May 25 through September 3?*

Response 2b: Construction of Alternative A Cannot Proceed During This Summer's Planned Shutdown

Construction of Alternative A cannot coincide with the planned shutdown this summer. As discussed above in Response 1a.1.3, the project team estimates that the necessary preparation to construct a station at Alternative A could not be finished before late 2021.

Information Request 2c

- *Alternative A was indicated to be technically feasible, assuming the construction of the protective shell, in the D/FEIS which was completed by WMATA. However, the March 11 submittal indicates that the project team is not aware of this construction practice occurring on other rail projects. Does the project team have the experience and expertise with rail line construction to conclude that this method of construction is not technologically or logistically practicable?*

Response 2c: Project Team Possess Ample Experience to Evaluate Alternative A

Consistent with the D/FEIS, the project team supports the concept that construction of a protective shell for Alternative A is *technically feasible* from an engineering standpoint. That does not mean, however, that this option is *practicable* when considered in light of the other relevant factors summarized in the introduction to this letter.

The project team members collectively have many decades of personal and institutional experience constructing and operating rail lines. It must first be reiterated that WMATA is an instrumental member of the project team for this application. WMATA has been responsible for constructing, operating, and maintaining the Metrorail system since 1970. The Metrorail system is the second largest metro system in the United States, behind only the New York City Subway. WMATA's capital budget this year alone is \$1.5 billion, which evidences its ongoing practical experience and expertise with station and rail line infrastructure projects. Although the protective shell approach has never been undertaken by WMATA, and the project team members have no experience with it, the team has ample technical expertise and experience to evaluate the feasibility and practicability of this alternative.

Information Request 2d

- *Provide a comparison of the specific safety concerns listed on pages 16-17 of the March 11 response as they pertain to Alternative B. For example, Alternative B cross-section (i.e. 448+00) provided in the March 11 submittal depict construction occurring within approximately 15 feet of the active lines. Given the proximity of Alternative B to the active rails it appears some of the safety concerns apply to both alternatives.*

Response 2d: Comparison of Safety Factors Relevant to Alternatives A and B

Every major construction project entails a host of safety hazards to workers and members of the public in the vicinity of the construction site. Prudent project managers will avoid all unnecessary hazards and take precautions to minimize hazards that cannot be avoided. This project is no different. Construction of a station at Alternative B includes typical hazards associated with operating heavy equipment and large construction materials around a site with workers. Building a station at Alternative A includes these same typical hazards, but adds to them the challenge of operating at a site in which workers are exposed to high-speed trains frequently traveling through the center of the construction site and in which the traveling public is exposed to ongoing construction activity. While precautions such as the protective shell can be taken to minimize these hazards, the fact remains that Alternative A presents a number of foreseeable hazards that could be avoided by constructing Alternative B.

The following table summarizes the comparative safety considerations for Alternatives A and B. This table does not include typical construction-related safety hazards that are common to both alternatives.

Summary of Safety Factors Relevant to Alternatives A and B

Factor	Alternative A	Alternative B
Proximity to electrical current	<p>Worksite is immediately adjacent (within a foot) to third rail, with electrical current on both sides of the railroad, for a distance of at least 600 ft (the length of the station platform).</p> <p>Arcing of current is a concern. This risk is mitigated but not entirely eliminated by the protective shell.</p>	<p>The worksite is isolated from electrical current by distance and a fence. The construction site is 15 ft from the third rail at its <i>closest</i> point, but generally is much further away.</p> <p>Although arcing possible up to 100 ft, much of the construction activity will be outside that distance, except during the two weekend shutdowns to re-align the track. The third rail will be deenergized during these times.</p>
Potential for fouling tracks by falling debris and tools.	<p>Worksite is <u>immediately adjacent (less than 1 ft)</u> to and above the operating railroad, for a distance of at least 600 ft (the length of the station platform).</p> <p>Falling debris and tools have the potential to foul the tracks creating an unsafe situation. This risk is partially mitigated but not eliminated by protective shell.</p>	<p>Construction zone is separated from the operating railroad. The closest point is approximately 15 ft from the operating railroad.</p> <p>Reduced potential for fouling the operating tracks due to falling equipment.</p>
Potential for fouling tracks due to overhead crane work.	<p>Worksite is <u>immediately adjacent (less than 1 ft)</u> to and above the operating railroad, for a distance of at least 600 ft (the length of the station platform).</p> <p>Overhead work has the potential to foul the tracks creating an unsafe situation over the entire duration of construction. This risk is partially mitigated by railroad shutdowns when overhead work is taking place.</p>	<p>Construction zone is separated from the operating railroad (except for pedestrian bridge over the CSX tracks, which is common to both alternatives). Most overhead work will not threaten operating railroad.</p> <p>With no material being lifted <i>over</i> the operating tracks for most elements of station construction, the only relevant risk is of a crane in close proximity to the tracks tipping over (rare occurrence), but this is a common risk for both alternatives.</p>

Factor	Alternative A	Alternative B
Construction Site Management	<p>The active rail line bisecting the construction site makes it much more challenging to safely move workers and equipment around the site.</p> <p>Workers must move south to the safe crossing point approximately one-quarter mile from the site. Large equipment will either have to be moved at same remote crossing point (logistical constraint) and/or the contractor will have to obtain duplicate equipment (adds cost).</p> <p>Extremely limited area to the east of the station (adjacent to existing homes) also appears too narrow to allow two-way traffic and increases risk of accident for workers and equipment sharing such a small space.</p>	<p>Construction workers will have complete control over most of the worksite. The active railroad is minimized as a logistical constraint.</p> <p>Location allows adequate laydown area to facilitate safe equipment operation.</p>
Construction Duration	<p>Safety precautions necessary to work adjacent to an active track (e.g., erecting and removing protective shell, shutdowns to lift heavy structural elements over the shell) slow the production of work crews, thereby increasing the time workers are on the construction site.</p>	<p>Safety precautions do not require work stoppages.</p>

Information Request 3

3. JPA pages 42 and 57, and the March 11 submittal indicate that Alternative A will have vibration impacts to residences that exceed WMATA and FTA Vibration Criteria.

Information Request 3a

Please expand on this statement in terms of project practicability.

Response 3a: Noise and Vibration Effects Are Substantial Environmental Impacts

As a point of clarification, the JPA characterizes the noise and vibration impacts on residents in the vicinity of a Metrorail station at Alternative A primarily as substantial *environmental impacts* associated with this alternative. Although measures to mitigate those impacts potentially could affect the practicability analysis in terms of cost, technology, or logistics (see responses below),

the City did not have sufficient information available to factor them into the practicability analysis as standalone cost, technological, or logistical factors because specific mitigation measures were not evaluated in the D/FEIS process. While a range of potential mitigation measures are discussed, specific mitigation measures for noise and vibration impacts associated with Alternative A were deferred until the “final design” stage. DEIS 2-41. Accordingly, these potential impacts on the project are factored into the practicability analysis as part of the contingency in the cost estimate for Alternative A.

Information Request 3b

Do exceedances occur at other Metrorail station and rail projects?

Response 3b: Noise and Vibration Exceedances Do Occur Elsewhere

Yes, exceedances are known to occur at other Metrorail stations. Exceedances occur because of either temporary or permanent situations. A temporary situation could occur due to equipment (track or railcars) in need of maintenance or construction projects. These situations are remediated as they are identified.

A permanent exceedance typically occurs due to a change in the surrounding environment. For example, the Blue and Yellow lines were constructed on undeveloped land and adjacent to an active rail yard in Northern Alexandria. Over twenty years later, a landowner built a townhome community (Potomac Greens) immediately adjacent to Blue and Yellow lines transit rail. In these cases, any permanent exceedance from WMATA’s rail activity is considered ‘grandfathered’ in, meaning no remedial work would be required at this site under WMATA’s standards. However, construction of Alternative A would make the existing noise and vibration impacts substantially worse both during the multi-year construction period and during operation of the station. Notwithstanding the potential legal requirements triggered by such impacts, the situation would have a predictable adverse impact on residents of Potomac Greens.

Information Request 3c

What are the consequences of exceeding WMATA and FTA Vibration Criteria?

Response 3c: Exceeding Noise and Vibration Criteria Triggers Mitigation Review

Exceeding the WMATA and FTA noise and vibration criteria has a significant potential to impose additional cost and logistical burdens on the project. However, it is not reasonably possible to quantify the “consequences” with respect to Alternative A with any substantial degree of certainty at this time because the mitigation measures would have to be developed in discussions with WMATA, FTA, and affected homeowners and would be driven in large part on future discretionary decisions of WMATA and FTA.

WMATA noise and vibration criteria are design standards incorporated into the *WMATA Manual of Design Criteria* (2016) that sets standards for all projects. Failure to satisfy those standards could force WMATA to buy noise and/or vibration easements for properties affected by the

project. This measure would increase the cost of the project by an unknown but potentially substantial amount. The cost of such easements is generally not made public and would have been negotiated individually with owners of high-value homes in Potomac Greens. The time necessary to reach agreement on the easements also could delay the commencement of construction, thereby adding additional construction delay costs.

FTA Noise and Vibration Criteria are used to assess the significance of potential impacts. *See* DEIS 3-155. Exceeding these criteria is discouraged by FTA, which provides funding for the project. When exceedances are predicted, FTA encourages mitigation. The predicted exceedances must be documented in an appropriate NEPA document. *See* DEIS 3-6 & 3-161 (noting that vibration impacts at Alternative A would exceed the FTA criteria for six residences). Noise and vibration mitigation typically require engineering solutions. Sound barriers are often used to isolate a noise source (i.e., the station, rail line, or crossover) and nearby receptors (i.e., residents). Due to the extremely close proximity of homes in Potomac Greens to the Alternative A station location and planned double crossover, designing and constructing an adequate sound barrier would present a substantial technical and logistical challenge. Vibration impacts can be mitigated by design changes to the station or crossover track switch. *See* DEIS 3-163. Impacts could also be mitigated by retrofitting nearby residences and any concrete slabs with vibration isolating devices. In either case, mitigating these impacts could be an expensive and time-consuming exercise.

Information Request 4

4. *Provide the following information regarding the proposed temporary impacts:*

Information Request 4a

- *The additional information provides cross-sections for the permanent impact location. Provide cross-sections that include the temporary fill to be placed in wetlands.*

Response 4a: Temporary Fill Cross-Sections

Attachment M contains revised cross-sections for the project that include the temporary fill for both the preloading area and the haul road/crane area. Preloading involves placement of fill (soil) that will settle over an engineer-determined duration. Once the desired settlement is reached, the excess fill material used in the preloading operation (shown here as a temporary impact immediately adjacent to the permanent fill) will be removed as needed in order to establish the permanent grades needed for the station.

Temporary impacts for the haul road and crane area include land clearing and grubbing, placement of filter fabric or a similar material over the wetland areas, and minimal fill to create a stable surface for equipment. Suitable, non-erodible material will be used to create the haul road according to the Virginia Stormwater Management Handbook E&S specifications.

Information Request 4b

- *DEQ has received numerous citizen concerns regarding impacts to the adjacent tidal wetlands. The limits of disturbance appear to be within 10 feet of the tidal wetland. Provide a description of what additional controls are planned to be utilized in the location closet to tidal wetlands to prevent to discharge of sediment.*

Response 4b: Measures to Protect Tidal Wetlands

The final stormwater plan and erosion/sediment (E&S) control plan will be reviewed prior to construction and will conform to all state and local regulations. In the interim, please see the attached graphic (Attachment N) that shows E&S controls that will be implemented near the tidal wetlands. A 10-foot buffer will be established between the tidal wetland and the limits project area. A row of super silt fence, providing secondary sediment control, will be established and maintained 10 feet from the tidal wetland. In addition, a row of silt fence will be established and maintained 5-feet landward of the super silt fence to provide the primary sediment control. E&S controls will be inspected on a regular basis by the contractor to ensure proper maintenance.

As part of the development of the final E&S control plans the design/build team will explore supplemental measures to implement to further ensure sediment is prevented from entering the tidal wetlands. These supplemental measures may include but not limited to the use of diversion dikes and grading the area towards a sediment basin.

These E&S controls can also be seen on the cross-section closest to the tidal wetland (450+50).

* * *

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations.

 4/29/19

Emily A. Baker
Deputy City Manager
City of Alexandria